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EXAMINER	
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ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,806	LOHBIHLER, ANDREW	
	Examiner	Art Unit	
	TAMMY PHAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-82* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-82* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 12 June 2005 was filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 7-9, 12-13, 18-19, 25, 28, 30-33, 38-40, are rejected under 35 U.S.C. 102(b) as being anticipated by Schier (US Patent No: 5,012,049).

3. **In regards to independent claim 1,** Schier teaches of a system for sensing position (Fig. 9) comprising:

4. a transmitting device (Fig. 9, item 12) operable to transmit a radio signal (column 2, lines 53-58);

5. at least two receiver units (Fig. 9, items 14, 16, 18, 20, 22) in spaced relation to each other and each operable to receive a different version of the radio signal; and,

6. an electronic circuit (Fig. 7) coupled to the receiver units (Fig. 9, items 14, 16, 18, 20, 22) and operable to determine a location of the radio transmitting device (Fig. 9, item 12) in relation

to the receiver units (Fig. 9, items 14, 16, 18) based on a comparison between each the different version of the radio signal (column 6, lines 5-25).

7. **In regards to independent claim 30,** Schier teaches of a transmitting device (Fig. 9, item 12) operable to transmit a radio signal, the transmitting device (Fig. 9, item 12) for communication with at least two receiver units (Fig. 9, items 14, 16, 18, 42) in spaced relation to each other and each operable to receive a different version of the radio signal (Figs. 3-5) in order to determine a position of the transmitting device (Fig. 9, item 12) via an electronic circuit (Fig. 7) connected to the at least two receiver units (Fig. 9, items 14, 16, 18, 42).

8. **In regards to independent claim 31,** Schier teaches of a receiver unit (Fig. 9, items 14, 16, 18, 42) operable to receive a radio signal transmitted from a transmitting device (Fig. 9, item 12); the receiver unit (Fig. 9, items 14, 16, 18, 42) for placement in spaced relation to another substantially identical receiver unit such that each receiver unit (Fig. 9, items 14, 16, 18, 42) is operable to receive a different version of the radio signal, the receiver unit (Fig. 9, items 14, 16, 18, 42) for connection to an electronic circuit (Fig. 7) connectable to both of the receiver units (Fig. 9, items 14, 16, 18, 42), the electronic circuit being operable to determine a location of the radio transmitting device (Fig. 9, item 12) in relation to the receiver units (Fig. 9, items 14, 16, 18, 42) based on a comparison between each the different version of the radio signal (Figs. 3-5.

9. **In regards to independent claim 32,** Schier teaches of a method for sensing position comprising:

10. receiving a first version of a radio signal from a transmitting device (Fig. 9, item 12);

11. receiving a second version of the radio signal; and,

determining a location of the transmitting device (Fig. 9, item 12) based on a comparison of the first version and the second version (column 6, lines 10-25).

12. **In regards to claim 2,** Schier teaches of at least one additional radio transmitting device (Fig. 13, item 64), each of the radio transmitting devices (Fig. 13, items 62, 64) operable to transmit a radio signal orthogonal to each other the radio transmitting device (Fig. 13, items 62, 64, see the hyperbolae and surface associated with the first and second transmitter), the electronic circuit (Fig. 7) farther operable to distinguish each of the radio transmitting devices (Fig. 13, items 62, 64) from the other based on the orthogonal signals, the electronic circuit (Fig. 7) being further operable to determine a location of the radio transmitting devices (Fig. 13, items 62, 64) substantially simultaneously (Figs. 3-4, item t).

13. **In regards to claims 7, 38,** Schier teaches that the different versions of the radio signal are identifiable via a phase shift between the versions (Figs. 3-5).

14. **In regards to claims 8, 39,** Schier teaches that the different versions of the radio signal are identifiable using a carrier phase-delay technique (Figs. 3-5).

15. **In regards to claims 9, 40,** Schier teaches that the transmitting device (Fig. 6) is affixed to a pointing device (Fig. 9, item 12) and the electronic circuit (Fig. 7) is coupled with an input

device (Fig. 9, item 14, 16, 18, 42) on a personal computer having a display device and such that the pointing device is operable to move a cursor on the display device (column 1, lines 10-15).

16. **In regards to claim 12,** Schier teaches of only two of the receiver units (Fig. 9, items 14, 16, 18, 42) and the location is expressed in a single-dimension (Fig. 9).

17. **In regards to claim 13,** Schier teaches of at least one of the transmitting device (Fig. 6) and the receiver units (Fig. 9, items 14, 16, 18, 42) remain fixed during operation (Fig. 9).

18. **In regards to claim 18,** Schier teaches that the electronic circuit (Fig. 7) comprises a channel pair processor (Fig. 2, items 20, 22) connected to the receiver units (Fig.), a detector & position calculator (Fig. 2, item 24)connected to the channel pair processor (Fig. 2, items 20, 22), and an output device for presenting the location to an electronic peripheral attachable to the output device (column 1, lines 10-15).

19. **In regards to claim 19,** Schier teaches that the electronic peripheral is a computer and a display device, the computer being configured to present a representation of the location on the display device (column 1, lines 10-15).

20. **In regards to claim 25,** Schier teaches that the transmitting device is incorporated into a computer interface of a mouse (column 1, lines 10-15).

21. **In regards to claim 28,** Schier inherently teaches that the receiver unit (Fig. 9, items 14, 16, 18, 42) comprises an antenna (not shown) and a receiver element (Fig. 7).

22. **In regards to claim 33,** Schier teaches of the steps of: receiving first version of at least one additional radio signal from at least one additional radio transmitting device (Fig. 13, item 64), the at least one additional radio signal being orthogonal to the radio signal (Fig. 13, notice that the hyperbolae and surface of the first and second transmitter or orthogonal to each other); receiving a second version of the at least one additional radio signal; determining a location of the at least one transmitting device (Fig. 13, items 62, 64) based on a comparison of the first and second versions of the at least one additional radio signal (Fig. 10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

23. Claims 11, 14-17, 20, 22, 26-27, 29, 42, are rejected under 35 U.S.C. 103(a) as being unpatentable over Schier (US Patent No: 5,012,049).

24. **In regards to claims 11, 42,** Schier teaches of a power supply (Fig. 6, item Laser Diode) incorporated into the transmitting device (Fig. 9, item 12).

25. Schier fails to teach that the power supply consists of a battery, a solar cell, a coil operable to receive energy from an EM powering field radiating proximal to the power supply, or a coil operable to induce electrical energy from a magnetic field by mechanical motion.

26. Examiner takes official notice that it is well known in the art to to interchange the power supply of Schier with another alternative listed option, in order to provide a more efficient method of power.

27. It would have been obvious to one with ordinary skill in the art at the time the invention was made to interchange the power supply of Schier with another alternative listed option, in order to provide a more efficient method of power.

28. **In regards to claim 14,** Schier teaches of three of the receiver units (Fig. 9, items 14, 16, 18, 42), the electronic circuit (Fig. 7) operable to receive a first input from a first pairing of the three receiver units (Fig. 9, items 14, 16, 18, 42) and further operable to receive a second input from a second pairing the three receiver units (Fig. 9, items 14, 16, 18, 42), the pairings having only one of the receiver units in common (Fig. 10), the electronic circuit (Fig. 7) further operable to determine a two dimensional position of the transmitting device (Fig. 9, item 12) based on a comparison of the first input and the second input (Fig. 10).

29. Schier fails to teach that the receivers are arranged in a triangular format.

30. Applicant has not disclosed any specific advantage or criticality to having the receivers be arranged in a triangular format. As such, having the receivers arranged in a triangular format is an obvious matter of design choice.

31. It would have been obvious to one with ordinary skill in the art at the time the invention was made to rearrange the receivers to reflect a particular pattern or arrangement in order to provide the most efficient and compatible arrangement to that particular use. In other words, having the receivers be arranged in various patterns such as a linear, triangular, or cubic pattern, would perform equally well in receiving various signals.

32. **In regards to claim 15,** Schier teaches of four of the receiver units (Fig. 9, items 14, 16, 18, 42), the electronic circuit (Fig. 7) operable to receive four separate inputs from four respective pairings of the four receiver units (Fig. 9, items 14, 16, 18, 42), the electronic circuit (Fig. 7) further operable to determine a three dimensional position of the transmitting device (Fig. 9, item 12) based on a comparison of the separate inputs (Fig. 10).

33. Schier fails to teach that the receivers are arranged in a rectangular format.

34. Applicant has not disclosed any specific advantage or criticality to having the receivers be arranged in a rectangular format. As such, having the receivers arranged in a rectangular format is an obvious matter of design choice.

35. It would have been obvious to one with ordinary skill in the art at the time the invention was made to rearrange the receivers to reflect a particular patter or arrangement in order to provide the most efficient and compatible arrangement to that particular use. In other words, having the receivers be arranged in various patterns such as a linear, triangular, or cubic pattern, would perform equally well in receiving various signals.

36. **In regards to claim 16,** Schier as modified above in claim 15, teaches that the rectangular format may be a plane arranged around a periphery of a computer display (Fig. 10).

37. **In regards to claim 17,** Schier fails to teach of eight of the receiver units arranged in a cube, the electronic circuit operable to receive eight separate inputs from eight respective pairings of the eight receiver units, the electronic circuit further operable to determine a three dimensional position of the transmitting device in relation to the cube based on a comparison of the separate inputs.

38. Applicant has not disclosed any specific advantage or criticality to having eight of the receiver units arranged in a cube, the electronic circuit operable to receive eight separate inputs from eight respective pairings of the eight receiver units, the electronic circuit further operable to determine a three dimensional position of the transmitting device in relation to the cube. As such, having the receivers arranged in three dimensional cube is an obvious matter of design choice.

39. It would have been obvious to one with ordinary skill in the art at the time the invention was made to rearrange the receivers to reflect a particular patter or arrangement in order to provide the most efficient and compatible arrangement to that particular use. In other words, having the receivers be arranged in various patterns such as a linear, triangular, or cubic pattern, would perform equally well in receiving various signals.

40. **In regards to claim 20,** Schier teaches that the channel pair processor (Fig. 2, items 20, 22) coupled to the receiver unit (Fig. 2, items 14, 16, 18) to receive input therefrom, the channel

pair processor (Fig. 2, items 20, 22) comprising a phase data calculator (Fig. 2, items 20, 22) for determining amplitude and phase information from the digital signals and for outputting the amplitude and phase information to the detector & position calculator (Fig. 2, ietm 24).

41. Schier fails to teach of a I/Q demodulator and an analog-to-digital converter coupled to the I/Q demodulator for converting analog signals therefrom to digital signals.

42. Examiner takes official notice that it is well known in the art to incorporate a I/Q demodulator and an analog-to-digital converter coupled to the I/Q demodulator for converting analog signals therefrom to digital signals into the electronic circuit.

43. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include I/Q demodulator and an analog-to-digital converter coupled to the I/Q demodulator with the electronic circuit of Schier in order to convert analog signals therefrom to digital signals in order to better analyze the signals.

44. **In regards to claim 22,** Schier teaches that the transmitter device (Fig. 9, item 12) comprises a power supply (Fig. 6), orthogonal code generator (Fig. 13, item 64), the transmitter device (Fig. 9, item 12) further comprising an antenna (inherent) connected to an output of the pulse shaping modulator for outputting the radio frequency (Figs. 3-5).

45. Schier fails to teach of a VCO generator interconnected by an RF signal modulator; and of a transmitter device that further comprise of a pulse shaping module for shaping a waveform output from the RF signal modulator.

46. Examiner takes official notice that it is well known in the art to include a VCO generator interconnected by an RF signal modulator; and of a transmitter device that further comprise of a pulse shaping module for shaping a waveform output from the RF signal modulator.
It would have been obvious to one with ordinary skill in the art at the time the invention was made to include a VCO generator interconnected by an RF signal modulator; and of a transmitter device that further comprise of a pulse shaping module for shaping a waveform output from the RF signal modulator with the transmitter device of Schier, in order to enable the transmitter device to properly transmit a signal.

47. **In regards to claims 26, 27,** Schier fails to teach that the transmitting device is incorporated into a surgical instrument {claim 26} or an industrial robot {claim 27}.

48. Applicant has not disclosed any specific advantage or criticality to having the transmitting device be incorporated into a surgical instrument or an industrial robot. As such, this incorporation is an obvious matter of design choice.

49. It would have been obvious to one with ordinary skill in the art at the time the invention was made to incorporate the transmitting device into any environment, including a surgical instrument or an industrial robot, since the device would perform equally well in any environment, and since implementation of the device in either of the environments would be within a predictable range of intended use of the transmitting device.

50. **In regards to claim 29,** Schier teaches that the receiver element (Fig. 2, items 14, 16, 18, 20, 22).

51. Schier fails to teach of a low-noise amplifier connected to the antenna, a bandpass filter connected to the low-noise amplifier, and an intermediate frequency amplifier connected to the bandpass filter for outputting to the electronic circuit.

52. Examiner takes official notice that it is well known in the art to include a low-noise amplifier connected to the antenna, a bandpass filter connected to the low-noise amplifier, and an intermediate frequency amplifier connected to the bandpass filter for outputting to the electronic circuit.

53. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include a low-noise amplifier connected to the antenna, a bandpass filter connected to the low-noise amplifier, and an intermediate frequency amplifier connected to the bandpass filter for outputting to the electronic circuit in order to design a receiver element that is able to receive various signals.

54. Claims 3, 34, are rejected under 35 U.S.C. 103(a) as being unpatentable over Schier (US Patent No: 5,012,049) in view of Kent (US Patent No: 5,591,945).

55. **In regards to claims 3, 34,** Schier teaches of an antenna (inherent) associated with each of the receiver units (Fig. 9, items 14, 16, 18, 43) are spaced apart.

56. Schier fails to teach that the spacing between the receiver units are about one-half of a wavelength of the radio signal.

57. Kent teaches that the spacing between the receiver units are about one-half of a wavelength of the radio signal (column 26, lines 20-25).

58. It would have been obvious to one with ordinary skill in the art at the time the invention was made to have the receiver units of Schier be spaced apart about one-half of a wavelength of the radio signal as taught by Kent, so that the signals are not analyzed separately (Kent, column 26, lines 24-25).

59. Claims 4-6, 10, 21-23, 35-37, 41, 43-44, 46-52, 54-75, 76-82, are rejected under 35 U.S.C. 103(a) as being unpatentable over Schier (US Patent No: 5,012,049) in view of Dupray (US Patent No: 6,249,252 B1).

60. **In regards to independent claim 44,** Schier teaches of a system for sensing position comprising:

61. at least two transmitting devices (Fig. 13, items 62, 64) each operable to transmit an orthogonal radio signal (Fig. 13);

62. at least two receiver units (Fig. 9, items 14, 16, 18, 42) in spaced relation to each other and each operable to receive a different version of each of the radio signals, the receiver units (Fig. 9, items 14, 16, 18, 42) comprised of an antenna (inherent) and a receiver element (Fig. 9, items 14, 16, 18, 42); and,

63. an electronic circuit (Fig. 7) coupled to the receiver element (Fig. 9, items 14, 16, 18, 42) and operable to substantially simultaneously determine a location of each of the radio transmitting devices (Fig. 13, items 62, 64) in relation to the receiver units (Fig. 9, items 14, 16, 18, 42) by distinguishing the transmitting devices (Fig. 13, items 62, 64) based on the orthogonality and based on a comparison between each the different version of each respective radio signal (Figs. 3-5, 10).

64. Schier fails to teach that the transmitting devices transmit CDMA radio signal.

65. Dupray teaches that the transmitting devices transmit CDMA radio signal (column 21, lines 10-40).

66. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include the CDMA technique of Dupray with the radio signals of Schier in order to provide a modulation technique for facilitating communication for a large number of users (Dupray, column 10, lines 8).

67. **In regards to independent claims 48, 75,** Schier teaches of a radio transmitting system for identifying and locating one or more radio transmitting devices (Fig. 13, items 62, 64) in a radio transmitting area, including:

68. a signal propagating medium for conducting signals throughout the radio transmitting range (Fig. 13);

69. at least one of the radio transmitting devices (Fig. 13, items 62, 64) including means for producing a radio transmitting signal and coupling the signal to the propagating medium;

70. signal receiving means associated with the sensing area and connected to the propagating medium to receive at least one radio transmitting signal from the one or more radio transmitting devices (Fig. 13, items 62, 64); and,

71. means for decoding the radio transmitting signal to identify at least one of the radio transmitting devices (Fig. 13, items 62, 64).

72. Schier fails to teach that the radio transmitting signal comprising a spread spectrum signal; and that each radio transmitting signal including a unique code identifying the respective device.

73. Dupray teaches that the radio transmitting signal comprising a spread spectrum signal; and that each radio transmitting signal including a unique code identifying the respective device (column 9, lines 55-10).

It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the spread spectrum technology of Dupray with the radio signals of Schier in order to provide a modulation technique for facilitating communication for a large number of users (Dupray, column 10, lines 8).

74. **In regards to claims 4, 35,** Schier fails to teach that the radio signals are based on a spread spectrum technology.

75. Dupray teaches that the radio signals are based on a spread spectrum technology (column 9, lines 55-10).

76. It would have been obvious to one with ordinary skill in the art at the time the invention was made to use the spread spectrum technology of Dupray with the radio signals of Schier in order to provide a modulation technique for facilitating communication for a large number of users (Dupray, column 10, lines 8).

77. **In regards to claims 5, 36,** Schier as modified by Dupray in claim 4, teaches that the spread spectrum technology is selected from the group consisting of direct sequence spread

spectrum signals, frequency hopping spread spectrum signals, time hopping spread spectrum signals, linear frequency sweeping (chirp) signals, and hybrid signals (Dupray, column 9, lines 55-10).

78. **In regards to claims 6, 37, 43, 46,** Schier as modified by Dupray in claim 4, teaches that the radio signals are based on code division multiple access (CDMA) and the orthogonal codes are unique pseudo-noise (PN) codewords assigned to each of the transmitting devices (Dupray, column 9, lines 55-10).

79. **In regards to claims 10, 41,** Schier teaches that the pointing device (Fig. 9, item 12) includes at least one button for user actuation (Schier, column 1, lines 10-15) and of a transmitting device (Schier, Fig. 9, item 12).

80. Schier fails to teach that the radio signals is based on code division multiple access (CDMA) and is assigned a pseudo-noise (PN) codeword, and wherein an actuation of the button is transmitted to the receiver units via using one of the techniques of inverting the PN codeword for at least one bit-period, and switching to a different PN codeword for at least one bit period.

81. Dupray teaches that the radio signals is based on code division multiple access (CDMA) and is assigned a pseudo-noise (PN) codeword (Dupray, column 9, lines 55-10), and wherein an actuation of the button is transmitted to the receiver units via using one of the techniques of inverting the PN codeword for at least one bit-period, and switching to a different PN codeword for at least one bit period (column 21, lines 10-40).

82. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include the CDMA and PN techniques of Dupray with the radio signals of Schier in order to provide a modulation technique for facilitating communication for a large number of users (Dupray, column 10, lines 8).

83. **In regards to claim 21,** Schier teaches that the system is based on the detector & position calculator (Fig. 2, item 24) comprises: a processor (inherent) for receiving the amplitude and phase information (Figs. 3-5); a transmitter detector coupled to the processor and for determining an identity of the transmitting device (Fig. 9, item 12); a data signal extractor coupled to the transmitter detector for determining any specific data embedded in the radio signal respective to the transmitting device (Fig. 9, item 12); and, a device locator coupled to the data signal extractor for determining a position of the transmitting device (column 6, lines 5-25).

84. Schier fails to teach that the system is based on CDMA.

85. Dupray teaches that the system is based on CDMA (column 21, lines 10-40).

86. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include the CDMA technique of Dupray with the radio signals of Schier in order to provide a modulation technique for facilitating communication for a large number of users (Dupray, column 10, lines 8).

87. **In regards to claim 23,** Schier fails to teach that the orthogonal code generator generates PN codes and is comprised of a PN-code chip coupled to a microprocessor, the PN-code chip for instructing the microprocessor which PN code is to be generated for the transmitting device.

88. Dupray teaches that the orthogonal code generator may generates PN codes and is comprised of a PN-code chip coupled to a microprocessor, the PN-code chip for instructing the microprocessor which PN code is to be generated for the transmitting device.

89. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include the PN codes of Dupray with the radio signals of Schier in order to provide a modulation technique for facilitating communication for a large number of users (Dupray, column 10, lines 8).

90. **In regards to claim 24,** Schier as modified by Dupray in claim 23, teaches that the orthogonal code generator further comprises a switch for selectively changing the PN-code to another PN-code when the switch is activated (Dupray, column 10, lines 8).

91. **In regards to claim 47,** Schier teaches that the different versions of the radio signal are identifiable using at least one of a radiated signal strength technique and a carrier phase-delay technique (Figs. 3-5).

92. **In regards to claim 49,** Schier teaches of determining the position of at least one of the radio transmitting devices in the radio transmitting range (Fig. 13).

93. **In regards to claim 50,** Schier teaches that one or more radio transmitting devices are active devices (Fig. 13).

94. **In regards to claim 51,** Schier teaches of a means for generating an energy field in the propagating medium within the radio transmitting range (Fig. 13).

95. **In regards to claim 52,** Schier as modified by Dupray above in claim 48, teaches that the energy field includes a spread spectrum signal component (Schier, Fig. 13).

96. **In regards to claim 53,** Schier as modified by Dupray above in claim 48, teaches that each of the radio-transmitting devices includes a means to receive a signal through the EM energy field for active radio transmitting device operation (Dupray, Fig. 4).

97. **In regards to claim 54,** Schier teaches that the energy field includes an EM field or ea magnetic field (column 7, lines 20-35).

98. **In regards to claim 55,** Schier teaches that the propagating medium comprises free space in the radio-transmitting range (Fig. 13).

99. **In regards to claim 56,** Schier teaches that the propagating medium comprises an occlusion in the radio-transmitting range (Fig. 13).

100. **In regards to claim 57,** Schier as modified by Dupray above in claim 48, teaches that the spread spectrum signal component is a direct sequence spread spectrum (DSSS) signal (Dupray,

column 17, lines 35-65).

101. **In regards to claim 58,** Schier as modified by Dupray above in claim 48, teaches that the spread spectrum signal component is a frequency hopping spread spectrum (FHISS) signal (Dupray, column 17, lines 35-65).

102. **In regards to claim 59,** Schier as modified by Dupray above in claim 48, teaches that the spread spectrum signal component modulation is Amplitude Shift Keying (ASK) (Dupray, column 17, lines 35-65).

103. **In regards to claim 60,** Schier as modified by Dupray above in claim 48, teaches that the spread spectrum signal component modulation is Frequency Shift Keying (FSK) (Dupray, column 17, lines 35-65).

104. **In regards to claim 61,** Schier as modified by Dupray above in claim 48, teaches that the unique codes of the one or more radio transmitting devices are orthogonal codes (Dupray, column 17, lines 35-65).

105. **In regards to claim 62,** Schier teaches of one or more radio transmitting devices are active devices that generate a radio transmitting signal (Fig. 13).

106. **In regards to claim 63,** Schier teaches that the radio transmitting signal is an EM signal (column 7, lines 20-35).

107. **In regards to claim 64,** Schier teaches that the propagating medium comprises free space in the radio-transmitting range (Fig. 13).

108. **In regards to claim 65,** Schier teaches that the propagating medium comprises an EM reflecting and conducting layer in the radio-transmitting range (Fig. 13).

109. **In regards to claim 66,** Schier teaches that the signal receiver means (Fig. 9, items 14, 16, 18, 42) includes a plurality of spaced-apart signal receivers (Fig. 9, items 14, 16, 18, 42); and the means for determining the position of each of the one or more radio transmitting devices (Fig. 9, item 12) includes means for calculating the received signal strengths and phase differences (Fig. 3-5, column 6, lines 10-25) of the radio transmitting signals passing through the propagating medium to the plurality of signal receivers (Fig. 9, items 14, 16, 18, 42).

110. **In regards to claim 67,** Schier as modified by Dupray above in claim 48, teaches of a means for decoding and identifying each of the one or more radio transmitting devices (Schier, Fig. 13, items 62, 64) includes matched-filtering means for comparing received radio transmitting signals to stored spread spectrum codes of the one or more radio transmitting devices (Schier, column 6, lines 10-25).

111. **In regards to claims 68-73, 76-81,** Schier and Dupray fails to teach of at least one radio transmitting device comprises a:

112. 2-dimensional mouse controller {claims 68, 78};

113. 3-dimensional mouse controller {claims 69, 79};

114. at least two radio transmitting device comprises a tilting joystick controller {claims 70, 76};

115. at least two radio transmitting device comprises a "pointer" controller {claims 71, 77};

116. at least three radio transmitting device comprises a 6-DOF controller {claims 72, 80}; and

117. at least two radio transmitting device comprise a gesture interface controller {claims 73, 81}.

118. Applicant has not disclosed any specific advantage or criticality to having the transmitting device be incorporated into a 2-D or 3-D mouse; tilting joystick; pointer, 6-DOF; or gesture interface controller. As such, these incorporations is an obvious matter of design choice.

119. It would have been obvious to one with ordinary skill in the art at the time the invention was made to incorporate the transmitting device into any input device, including a 2-D or 3-D mouse; tilting joystick; pointer, 6-DOF; or gesture interface controller, since the transmitting device would perform equally well in any environment, and since implementation of the

transmitting device in any of the claimed input devices would be within a predictable range of intended use of the transmitting device.because this is within a predictable range of intended use of the transmitting device.

120. **In regards to claim 74,** Schier as modified by Dupray in claim 48, teaches that a portion of the radio transmitting devices includes a receiver operable to receive wireless instructions to vary operation of the radio transmitting devices (Dupray, Fig. 4).

121. **In regards to claim 82,** Schier teaches that a portion of the one or more radio transmitting devices (Fig. 13, items 62, 64) are active devices that generate a radio transmitting signal, and another portion of the one or more radio transmitting devices (Fig. 13, items 62, 64) are active transceiver devices (Fig. 13).

122. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schier (US Patent No: 5,012,049) in view of Dupray (US Patent No: 6,249,252 B1) and Kent (US Patent No: 5,591,945).

123. **In regards to claims 45,** Schier as modified by Dupray above in claim 44, fails to teach that the antennas associated with each of the receiver units are spaced apart at a distance of about one-half of a wavelength of the radio signal.

124. Kent teaches that the spacing between the receiver units are about one-half of a wavelength of the radio signal (column 26, lines 20-25).

125. It would have been obvious to one with ordinary skill in the art at the time the invention was made to have the receiver units of Schier be spaced apart about one-half of a wavelength of the radio signal as taught by Kent, so that the signals are not analyzed separately (Kent, column 26, lines 24-25).

Conclusion

126. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tammy Pham whose telephone number is (571) 272-7773. The examiner can normally be reached on 8:00-5:30 (Mon-Fri).

127. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

128. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TP
17 June 2008

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